

IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently amended) A heater (46) and air-conditioning assembly for a vehicle comprising;

a compressor (12) for compressing a refrigerant,

a front end condenser (14) in fluid communication with said compressor for condensing fluid from said compressor (12),

a chiller-condenser (16) disposed downstream of and in fluid communication with said condenser (14),

a chiller-evaporator (18) disposed downstream of and in fluid communication with said chiller-condenser (16),

a main three-way valve (20) disposed in fluid communication with and between said compressor (12) and said condenser (14) for directing flow from said compressor (12) to said condenser (14) in an air-conditioning mode and for directing flow from said compressor (12) through a by-pass line (22) to said chiller-condenser (16) in a heat pump mode,

a heat pump expansion device (24) for expanding and exchanging heat with the refrigerant in said heat pump mode, and

an by-pass valve (26) disposed in parallel fluid communication between said chiller-condenser (16) and said chiller-evaporator (18) for by-passing the serial ~~[[directing]]~~ flow directly from said chiller-condenser (16) to said chiller-evaporator to by-pass flow from said chiller-condenser through said heat pump expansion device (24) and then to said chiller-evaporator (18) in said heat pump mode.

2. **(Currently amended)** An assembly as set forth in claim 1 including an air-conditioning expansion device (28) disposed downstream of said front end condenser (14) and upstream of said by-pass line (22) for expanding the refrigerant in the air-conditioning mode.

3. **(Original)** An assembly as set forth in claim 2 including a return line (30) from said chiller-evaporator (18) to said compressor (12).

4. **(Original)** An assembly as set forth in claim 3 including an accumulator-dehydrator (32) in said return line (30).

5. **(Original)** An assembly as set forth in claim 2 including a cabin heat exchanger (36), a coolant feed line (34) for conducting coolant flow from said chiller-condenser (16) to said cabin heat exchanger (36), a coolant exit line (38) for conducting coolant from said cabin heat exchanger (36) to said chiller-evaporator (18), and an interconnect line (40) for conducting coolant from said chiller-evaporator (18) to said chiller-condenser (16).

6. **(Original)** An assembly as set forth in claim 5 including a circuit pump (42) in said feed line for pumping coolant from said chiller-condenser (16) to said cabin heat exchanger (36).

7. (Currently amended) A heater (46) and air-conditioning assembly for a vehicle comprising;

a compressor (12) for compressing a refrigerant,

a front end condenser (14) in fluid communication with said compressor for condensing fluid from said compressor (12),

a chiller-condenser (16) disposed downstream of and in fluid communication with said condenser (14),

a chiller-evaporator (18) disposed downstream of and in fluid communication with said chiller-condenser (16),

a main three-way valve (20) disposed between said compressor (12) and said condenser (14) for directing flow from said compressor (12) to said condenser (14) in an air-conditioning mode and for directing flow from said compressor (12) through a by-pass line (22) to said chiller-condenser (16) in a heat pump mode,

a heat pump expansion device (24) for expanding and exchanging heat with the refrigerant in said heat pump mode, and

an by-pass valve (26) disposed between said chiller-condenser (16) and said chiller-evaporator (18) for directing flow from said chiller-condenser (16) through said heat pump expansion device (24) and to said chiller-evaporator (18) in said heat pump mode,

a cabin heat exchanger (36),

a coolant feed line (34) for conducting coolant flow from said chiller-condenser (16) to said cabin heat exchanger (36),

a coolant exit line (38) for conducting coolant from said cabin heat exchanger (36) to said chiller-evaporator (18),

an interconnect line (40) for conducting coolant from said chiller-evaporator (18) to said chiller-condenser (16), and

~~[An assembly as set forth in claim 5 including]~~ a coolant three-way valve (44) in said exit line (38) for directing coolant from said cabin heat exchanger (36) to an engine coolant circuit in said heat pump mode.

8 **(Currently amended)** [An assembly as set forth in claim 5 including]

A heater (46) and air-conditioning assembly for a vehicle comprising;

a compressor (12) for compressing a refrigerant,

a front end condenser (14) in fluid communication with said compressor for condensing fluid from said compressor (12),

a chiller-condenser (16) disposed downstream of and in fluid communication with said condenser (14),

a chiller-evaporator (18) disposed downstream of and in fluid communication with said chiller-condenser (16),

a main three-way valve (20) disposed between said compressor (12) and said condenser (14) for directing flow from said compressor (12) to said condenser (14) in an air-conditioning mode and for directing flow from said compressor (12) through a by-pass line (22) to said chiller-condenser (16) in a heat pump mode,

a heat pump expansion device (24) for expanding and exchanging heat with the refrigerant in said heat pump mode, and

an by-pass valve (26) disposed between said chiller-condenser (16) and said chiller-evaporator (18) for directing flow from said chiller-condenser (16) through

said heat pump expansion device (24) and to said chiller-evaporator (18) in said heat pump mode.

a cabin heat exchanger (36),

a coolant feed line (34) for conducting coolant flow from said chiller-condenser (16) to said cabin heat exchanger (36),

a coolant exit line (38) for conducting coolant from said cabin heat exchanger (36) to said chiller-evaporator (18),

an interconnect line (40) for conducting coolant from said chiller-evaporator (18) to said chiller-condenser (16), and

a coolant three-way valve (44) in said exit line (38) for directing coolant from said cabin heat exchanger (36) to said chiller-evaporator (18) and chiller-condenser (16) in said air conditioning mode.

9. **(Original)** An assembly as set forth in claim 8 including a heater (46) in said coolant circuit, an engine pump (48) in said coolant circuit for pumping coolant through an engine (50) and said heater (46).

10. **(Original)** An assembly as set forth in claim 9 including a radiator (52), a thermostat (54) in said coolant circuit for selectively directing coolant in said coolant circuit through said heater (46) and said radiator (52) and said chiller-evaporator (18).

Appln. No.: 10/754,037

Amdt. dated January 27, 2005

Reply to Office action of November 18, 2004

11. **(Original)** An assembly as set forth in claim 10 including an air-conditioning expansion device (28) disposed downstream of said condenser (14) and upstream of said by-pass line (22) for expanding the refrigerant in the air-conditioning mode, a return line (30) from said chiller-evaporator (18) to said compressor (12), an accumulator-dehydrator (32) in said return line (30), and a circuit pump (42) in said feed line for pumping coolant from said chiller-condenser (16) to said cabin heat exchanger (36).